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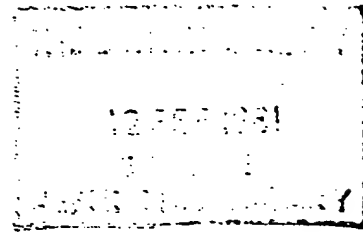
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Bezeichnung:

Verfahren und Anordnung zum Übertragen eines für den Unterricht mit einer Kommunikationsvorrichtung geeigneten Unterrichtsprogrammes über das Fernsehen

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Procedure and arrangement for the transmission of an instruction program which is suitable for instruction using a communication device by means of television

The invention relates to a procedure and an arrangement for the transmission of an instruction program which is suitable for instruction using a communication device by means of television.

 Possibilities have become known through the US Patent Specification 36 06 688 of making use of television transmissions in an instruction program in which teaching equipment is utilized. In this way, success has been achieved in providing instruction from developed countries to far-distant under-developed countries, in which the instruction no longer needs to be supervised by qualified instructors personally.

In the meantime, devices have been developed for teaching purposes which are not intended to serve as substitutes for qualified teachers, but instead they act as communication devices to provide the teacher with a review of the state of knowledge and comprehension of the students in a matter of a very few seconds, so that the teacher does not have to squander his time giving tests at random to determine the progress of individual students.

With such a type of communication device, not only is there a saving of time for the teacher, but it also provides a comprehensive survey that is just not possible with the use of random individual testing.

If such types of communication devices are now introduced into the teaching program, this does not exclude the possibility of the teacher being able to use visual aids such as material obtained, for example, with a television camera used for recording all sorts of events. If such types of visual recordings are used for instruction purposes, then it is very advantageous for the instructor if the teaching equipment of the communications device can be programmed with specific questions and answers and data files. The recording of an event for teaching purposes should not be merely a vehicle for the supplying of knowledge such as may be achieved in a simple fashion by the showing of a film on the subject, but the teaching program should provide the basis for discussion and consideration of the material by the students and for the drawing of conclusions from such activities. The work-load of the instructor can be lightened to an extraordinary degree if questions arising from the material presented can be directly input to his teaching equipment and also if the expected answers can be supplied directly to the communication device, so that they are readily and immediately available for student evaluation which is undertaken by the communication device and they are also displayed on the instructor's viewing screen. This means that the time required for preparation of lessons by the instructor is considerably decreased and also that there is no need to expend effort on duplicating and distributing printed material which can often easily get lost, apart from being quite expensive to produce.

The transmission of such teaching material by television has the special advantage that, on the one hand, there is no necessity for cabling connections and, on the other hand, it is possible to record televised material on video cassettes,

so that the teaching material of this nature is always readily available for viewing when required. However, there is the disadvantage that the frequency band available for the picture transmission and for the sound transmission is already completely filled, so that it is not possible to transmit extra information for programming the communication device. However, this is no different in the case of sound film. Here there is a sound track available alongside the picture track, but these are both required for the audio-visual reproduction of the material. If it is desired to store additional information for the programming of a communication device, then it would be necessary to have an additional track alongside the sound track and the picture track in order to be able to store such information on this third track which is needed to be transmitted to the communication device when the sound film is being run. However, this would require the extraordinarily expensive manufacture of special film material as well as the very expensive production of special suitable projectors.

The problem to be solved by the invention is the creation of the simple possibility of being able to undertake the transmission of information for the programming of the communication device alongside the transmission of both the picture and the sound, and the provision of circuitry for this purpose which could be manufactured at a relatively low cost.

The invention is based upon the fact that, during the transmission of the picture, one or several border lines and/or border columns is/are suppressed and impulses are transmitted on the portions of the transmission frequency band which are made available in this way and the impulses are supplied to the storage element of the communication device so that they may be used for programming the communication device.

If one or several border lines are missing from the border of a picture of 625 picture lines which are normally transmitted for a television picture, then this absence of lines from the transmitted picture will be practically un-noticed by the viewer. However, this creates such a wide zone for the transmission of impulses that every communication device can easily be provided with an over-abundance of coded information signals.

For the implementation of this procedure, use is made of an arrangement which is distinguished by the fact that in the device for the generation of the picture impulses of the television frequency band to be transmitted, a circuit is provided for the suppression of the picture impulses of one or more border lines and/or border columns as well as a circuit for the coding of impulses from a programming circuit into impulses of these border lines and/or border columns, and also there is a separation filter circuit provided in the receiving device by means of which the impulses corresponding to the said border lines and/or border columns are screened out of the television frequency band, and by the fact that after the separation filter there is a circuit coupled-in to which these impulses are supplied for coding conversion into programming impulses for the communication device.

The expenditure on the special circuitry used here is relatively small. It is very easily possible to suppress one or several lines or columns of the picture and to replace them by transmitted impulses which can be separated in the receiver circuit and converted by a transducer into impulses which are suitable for programming the communication device.

In this manner it is extremely simple, with very low expenditure on electronic components, to transmit, along with the picture and sound signals, additional information suitable for programming the communication device.

The nature of this present invention will now be discussed in greater detail with reference to the block diagrams shown in the drawings as Figures 1 and 2.

4 A scene which has been photographed with the television camera 1 is converted by an electronic circuit in the said camera into electrical impulses which occupy a specified known frequency band. Before these impulses reach the video-recorder 2 or a television transmitter, they pass through a circuit 3 in which one or several border lines and/or border columns of the picture are suppressed. This circuit 3 for suppressing one or several border lines and/or border columns of the picture is controlled by a synchronising circuit 4, so that it is only the intended border lines and/or border columns of the picture which are suppressed. After leaving the circuit 3 for suppressing one or several border lines and/or border columns of the picture, and before reaching the video-recorder 2 or a television transmitter, the impulses pass through a circuit 5 which, instead of the impulses which have been eliminated by the suppression of the border lines and/or the border columns, integrates impulses into the impulse train which are derived from a programming device 6 and which are converted in a transducer 7 in such a manner that they can be recorded as part of the television frequency band or as part of the transmitted impulse trains from the video-recorder 2, or
26 else they can be transmitted by a television transmitter.

On the receiver side, the electrical impulse trains of the television frequency band are picked up by way of an antenna when they are broadcast from the television transmitter, or else they are played back from a video-recorder 2 if these impulse trains have been recorded on a video-recorder.

• Before the impulse trains which are picked up from the video recorder 2 play-back reach the display screen of the television receiver 8, they pass through a separation filter 9, the operation of which is strictly synchronized with the impulse train associated with each picture.

Through this separation filter, those lines and columns, which are not suppressed in the circuit 3 during the picture transmission, are forwarded on to the television receiver 8, whereas those impulses which correspond to the suppressed border lines and/or border columns and which are integrated into the total impulse train, are sent to a converter 10 which converts them into programming impulses for sending to a programming device 11. In this programming device 11, information data, mostly in the form of electrical impulses and impulse trains, are produced, by means of which the communication device 12, consisting of an instructor's instrument and several student instruments, is supplied and programmed.

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FIG. 1

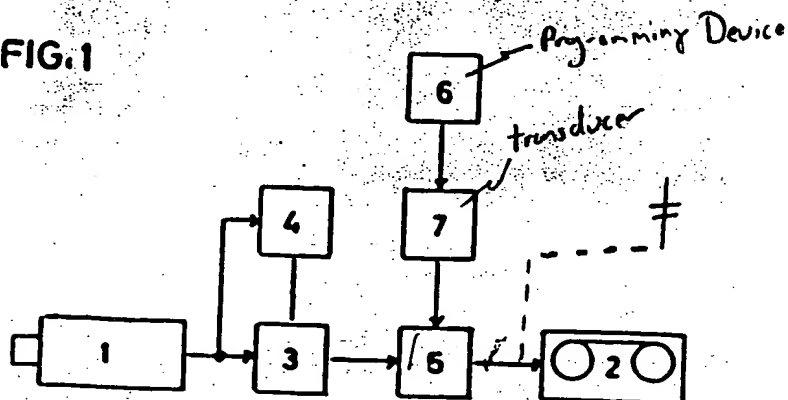


FIG. 2

